

1. FOUNDATION COURSES

COURSE CODE	COURSE NAME	CREDITS
0101	English - I	3
0102	Basics of Computer Science - I	4
0103	Mathematics - I	7
0104	Applied Physics - I	3
0105	Applied Chemistry - I	4
0106	Technical Drawing	3
0107	Applied Physics Practical - I	1
0108	Applied Chemistry Practical - I	1
0109	Workshop Practice - I	1.5
0110	English - Communication Practical - I	1
0111	English - II	3
0113	Basics of Computer Science - II	4
0114	Mathematics - II	7
0115	Applied Physics - II	3
0116	Technical Drawing	4
0117	Applied Physics Practical - II	1
0118	Applied Chemistry Practical - II	1
0119	Workshop Practice - II	1.5
0120	English - Communication Practical - II	1
	Total Credit	57

2. CORE COURSES

Course Code	Course Name	Credits
I201	Electronic Circuit & Microprocessors	6
I202	Programming in C++	6
I203	System Programming	6
I204	Electronics Circuit & Microprocessors Lab	3
I205	Programming in C++	2.5
I206	Software Lab	3
I207	Networks and Administration Lab	6
I208	Data Structures & Algorithm	6
I209	Management Information System	6
I210	Networks & Administration Lab	3
I211	Data Structure Lab (Implementation in "C")	2.5
I212	Desk Top Publishing	3
	TOTAL	53

3. APPLIED COURSES

Course Code	Course Name	Credits
I301	System Analysis and Design	7
I302	Relational Database Management Systems	6
I303	Multimedia Lab	2.5
I304	Relational Database Management System Lab	2.5
I305	Java Programming	7
I306	Computer Installation & Servicing	6
I307	Java Programming Lab	3
I308	Project work, Entrepreneurship and Personal skills	1.5
	TOTAL	35.5

4. DIVERSIFIED COURSES

Course Code	Course Name	Credits
1401	Diversified Course - I (A) Visual Basic Programming (B) Visual C++ Programming (C) Computer Graphics	7
1402	Diversified Course - Lab - I (A) Visual Basic Programming Lab (B) Visual C++ Programming Lab (C) Computer Graphics Lab	2.5
1403	Diversified Course - II (A) linux Programming & Administration (B) Power Builder (C) Web Technology	3
1404	Diversified Course - Lab - II (A) linux Programming & Administration Lab (B) Power Builder Lab (C) Web Technology Lab	7
	Total Credits	19.5

ABSTRACT

S.No.	COURSE	CREDITS	PERCENTAGE
1	Foundation Courses	57	34.5
2	Core Courses	53	32.2
3	Applied Courses	35.5	21.5
4	Diversified Courses	19.5	11.8
	Total	16.5	100

Curriculum and Scheme of Examinations
Diploma in Information Technology

III Term

S.No	Code No	Course Name	Hours/ Week	Credit	Scheme of Examination Allocation of Marks			Duration of Exam (Hrs)
					Internal	External	Total	
1	1201	Electronic Circuit & Microprocessors	6	6	25	75	100	3
2	1202	Programming in C++	6	6	25	75	100	3
3	1203	System Programming	6	6	25	75	100	3
4	1204	Electronics Circuit & Microprocessors Lab	6	3	25	75	100	3
5	1205	Programming in C++ Lab	5	2.5	25	75	100	3
6	1206	Software Lab	6	3	25	75	100	3
		Total	35	26.5	150	450	600	18

IV Term

S.No	Code No	Course Name	Hours/ Week	Credit	Scheme of Examination Allocation of Marks			Duration of Exam (Hrs)
					Internal	External	Total	
1	1207	Networks and Administration	6	6	25	75	100	3
2	1208	Data Structures & Algorithm	6	6	25	75	100	3
3	1209	Management information System	6	6	25	75	100	3
4	1210	Networks and Administration Lab	6	3	25	75	100	3
5	1211	Data Structures Lab (Implementation in "C")	5	2.5	25	75	100	3
6	1212	Desktop Publishing Lab	6	3	25	75	100	3
		Total	35	26.5	150	450	600	18

I201 ELECTRONIC CIRCUITS AND MICROPROCESSORS

III Term (Core Course)

6 Hrs / Week

Total Hrs: 72

MAJOR DIVISIONS:

UNIT- I SEMICONDUCTOR THEORY AND APPLICATIONS

UNIT-II DIGITAL ELECTRONICS

UNIT-III 8085 ARCHITECTURE

UNIT-IV 8085 MICROPROCESSOR PROGRAMMING

UNIT-V I/O READ & WRITE AND INTERFACING

UNIT - I SEMICONDUCTOR THEORY AND APPLICATIONS (14 Hrs)

- 1.1 Semiconductor Theory: Semiconductor materials; intrinsic and extrinsic materials; n-type and p-type materials; electron versus hole flow; majority and minority carriers. Semiconductor Diode: PN junction, unbiased and forward bias condition, reverse bias condition, V-I characteristics.
- 1.2 Zener Diode: Symbol; principle of operation; V -I characteristics – application.
- 1.3 Light Emitting Diode: Symbol; principle of operation; V -I characteristics - application.
- 1.4 Photo Diode: Symbol; principle of operation; V-I characteristics - application.
- 1.5 Opto Coupler: Symbol, principle of operation.
- 1.6 Bipolar Junction Transistors (Qualitative treatment only); Construction and operation of CE, CB and CC configuration with characteristic curves; diode and transistor as switch -cut-off and saturation conditions.
- 1.7 Rectifiers: Half wave rectifiers, full wave rectifiers and bridge rectifiers with and without filters; regulation, ripple factor, rectifier efficiency.(qualitative treatment only) Regulators: Zener diode as a regulator; fixed voltage regulator using IC 7805.

UNIT-II DIGITAL ELECTRONICS (14 Hrs)

(In this Unit from 2.8 to 2.12 all the circuits are using gates only circuits using ICs - not for examination)

- 2.1 Gates: Introduction - Logic state or logic level -true or false; 0 or 1; low or high, positive logic and negative logic, truth table, gate.
- 2.2 OR Gate: Two input OR gate -circuit, symbol, truth table, logic equation ($Y=A+B$); three input OR gate -circuit, symbol, truth table and logic equation ($Y=A+B+C$)
- 2.3 AND Gate: Two input AND gate -circuit, symbol, truth table, logic equation ($Y=AB$); three input AND gate- circuit, symbol, truth table and logic equation ($Y=ABC$).
- 2.4 NOT Gate: Circuit, symbol, truth table and logic equation.

- 2.5 Other Gates: Circuit, symbol, truth table and logic equation for NAND gate, NOR gate, EX-OR gates and EX-NOR gate.
- 2.6 Tristate logic: Three state gates -logic symbol and truth table – buffer – inverter.
- 2.7 Boolean Algebra: Basic laws of Boolean Algebra -commutative, associative and distributive laws; De-Morgan's theorems -theorem, logic equation and proof.
- 2.8 Arithmetic Circuits: Circuit, symbol, truth table and operation for -half adder, full adder, half subtracted.
- 2.9 Sequential Logic Circuits: Circuit symbol, truth table and operation for -RS flip-flop, JK flip-flop, D flip-flop and T flop-flop: Triggering -positive edge, negative edge, level triggering.
- 2.10 PLA: Circuit diagram, operation and applications of Programmable Logic Array ; 4 bit binary ripple counter and Decade counter; Circuit-diagram, operation, truth table and waveforms
- 2.11 Decoder (2 to 4), Encoder (3 to 8), Multiplexer (8 to 1) and demultiplexer (2 to 4) Definition, operation, truth table.
- 2.12 Shift Register: Definition, types, serial in/parallel out shift register; circuit diagram

UNIT-III 8085 ARCHITECTURE

(14 Hrs)

- 3.1 Micro Computer Organization: Block diagram, Microprocessor, Input, Output, Memory, System bus; Microcomputer working principle; Bus-Address bus, Data bus, Control bus; Example of a Microcomputer System; Microprocessor 8085 -Pin diagram, Architecture; Signal diagram -address bus, multiplexed address/data bus, control and status signals, power supply & clock frequency, interrupts, reset signals.
- 3.2 Classification of Instructions: Data transfer operations, Arithmetic operations, Logical operations, Machine control operations; Instruction format -Instruction word size, One- byte instructions, Two-byte instructions, three-byte instructions.

UNIT-IV 8085 MICROPROCESSOR PROGRAMMING

(15 Hrs)

- 4.1 8085 instructions: Data transfer operations; Addressing modes-Immediate, Register, Direct, Indirect; Arithmetic operations-Addition, Increment, Subtraction; Logic operations-AND, OR, EX-OR, NOT; Branch operations-unconditional jump, conditional jumps & I/O devices, machine control instructions
- 4.2 8085 programming: Instruction set of 8085-flowchat-machine language-assembly language
- 4.3 Macros-subroutines-stack and stack pointer-types of assembler-compiler and their uses.
- 4.4 Writing program for converting binary to decimal, decimal to binary, multiplication and division-16 bit multiplication and division. Adding an array of 8 bit data-sorting of an array of 8 bit data in ascending and descending order-finding the smallest and the largest number in an array.

UNIT-V I/O READ & WRITE AND INTERFACING

(15 Hrs)

- 5.1 Instruction cycle-machine cycle and T states. Memory read cycle-memory write-I/O-read cycle, I/O-write cycle-Bus idle cycle
- 5.2 Memory organization-Address Space partitioning-memory mapped I/O-I/O mapped I/O- parallel and serial data transfer in 8085.
- 5.3 Interrupts: Introduction-priority interrupts-vector interrupts-polled interrupts-polling methods-software and hardware polling.
- 5.4 8255 and 8257 : Pin diagram – block diagram – control word – functions of the pin.

REFERENCE BOOKS

- 1. Albert Paul Malvino, “Electronic Principles”, Third edition, Tata McGraw- Hill Publishing Company Limited, 1984.
- 2. Allen Mottershead, “Electronic Devices And Circuits -An Introduction”, Prentice-Hall of India, 1973.
- 3. Albert Paul Malvino and Leach Donald.P, “Digital Principles and Applications”, Third Edition, Tata McGraw-Hill Publishing Company Ltd,1981.
- 4. Gaomokar Ramesh.S, “Microprocessor Architecture, Programming and Applications with the 8085/8080 A”, Wiley Eastern Limited, 1986.

I201 ELECTRONIC CIRCUITS AND MICROPROCESSOR

Model Question Paper

Time : 3 Hrs

Maximum Marks: 75

- N.B 1. Answer all questions
2. Answer any one from Part - A (5 Marks) and one from Part – B (10 Marks)
- I. A. 1. Write short notes on intrinsic semiconductor.
2. Explain the principle of operation of photo diode.
- B. 1. Explain the construction and operation of BJT in common emitter configurations.
2. Explain bridge rectifier with and without filter.
- II. A. 1. Explain EX-OR and EX-NOR gates with symbol, Boolean expression and circuits.
2. Explain half-subtractor.
- B. 1. Explain 4 bit binary ripple counter with circuit diagram, waveform and count table.
2. Explain the operation of 8 to 1 multiplexor with neat circuit diagram.
- III. A. 1. Draw the pin diagram of 8085 microprocessor.
2. Explain logical instruction with examples.
- B. 1. Explain in detail about the internal architecture of 8085 microprocessor.
2. Explain address bus, multiplexed address/data bus, control and status signal.
- IV. A. 1. Explain the addressing modes of 8085 microprocessor.
2. Discuss various formats of move instruction.
- B. 1. List down the various conditional jump instruction and explain each.
2. Write a program for multiplication and division of 8-bit data.
- V. A. 1. Explain T-state and machine cycle.
2. Draw the pin diagram of 8255.
- B. 1. Draw and Explain the timing diagram of memory read cycle.
2. Explain the operation of 8257 with neat block diagram.

I202 PROGRAMMING IN C++

III Term(Core Course)

6 Hrs / Week

Total Hrs:72

MAJOR DIVISIONS:

UNIT - I INTRODUCTION TO OOPS

UNIT – II POINTER, CLASSES & CONSTRUCTORS

UNIT – III OPERATOR OVERLOADING & INHERITANCE

UNIT – IV TEMPLATES & I/O STREAMS

UNIT – V FILES EXPERTION HANDLING & GRAPHICS

UNIT - I INTRODUCTION TO OOPS

(14Hrs)

- 1.1 Evolution of programming paradigms-monolithic programming-procedural programming-structured programming-object oriented programming-characteristics of object oriented programming—class-objects-data abstraction-inheritance-polymorphism-reusability-message communication-advantages of oop.
- 1.2 Moving from c to c++ -structure of a c++ program -new keywords in c++- name spaces-commenting a program-variable declaration-console input and output- Constant qualifiers-static data members-scope resolution operator- type casting-void pointers-references-structure, union, typedef and enum syntax-making reference to a structure and to an array-dynamic memory allocation-new and delete operator
- 1.3 Functions -function prototyping-function definition -passing arguments to function -returning values from functions-default argument-storage class-call by value and call by reference- returning by reference-const reference structure –recursive function-function overloading-inline functions

UNIT – II POINTER, CLASSES & CONSTRUCTORS

(14Hrs)

- 2.1 Pointers-pointer variables-pointers and arrays-pointers and parameter passing-void pointers-pointer arithmetic-pointers to pointer-array of pointers-dynamic multidimensional array-pointers and string- pointers to function-pointer to structure
- 2.2 Classes -class specification-definition -member and member functions –access specifiers-defining member functions inside and outside class body-passing objects as arguments -passing arguments by reference-returning objects-friend functions and friend class-static data members and member function.
- 2.3 Constructors-parameterized constructor-copy constructor- multiple constructors- destructors -constructor with default argument-dynamic constructor- nameless objects-nested classes-constructing two-dimensional arrays-pointer to objects- pointers to derived classes-array of objects- this pointer-self referential classes

UNIT – III OPERATOR OVERLOADING & INHERITANCE

(14 Hrs)

- 3.1 Operator over loading- defining operator overloading-overloadable operators-unary operator overloading-over loading of increment operators-binary operator overloading-binary operator overloading using friend-concatenation and comparison of strings-overloading of arithmetic operator and subscript operator-overloading of new and delete operator-conversion between objects of different classes-conversion between objects and basic data types -conversion between basic data type to class - overloading stream operators using friend function.
- 3.2 Inheritance-derived class-Visibility of class members—forms of inheritance-member function accessibility-constructor in derived class- destructors in derived class- constructor invocation and data member initialization-abstract class-multiple inheritance-passing parameter to multiple constructors-examples-virtual base class- virtual functions-definition of virtual function-pure virtual functions-virtual destructor-simple programs.

UNIT – IV TEMPLATES & I/O STREAMS

(15 Hrs)

- 4.1 Templates-function template-syntax and invocation of function templates-class templates-template arguments-overloading of template functions-member function template- simple programs
- 4.2 Input /output -stream-stream classes-iostream library-ios class-istream class –ostream class-unformatted i/o operations get() .put (), getline() write formatted console i/o- ios class functions and flags-width(), precision(),fill(),setf() ,unsetf() functions- manipulators-predefined manipulators—creating user defined manipulators- examples

UNIT – V FILES EXCEPTION HANDLING & GRAPHICS

(15 Hrs)

- 5.1 File I/O-string I/O-character I/O-object I/O-opening file-reading and writing data- closing file-detecting end of file-file opening modes-binary I/O-simple database management-random access to a file-command line arguments.
- 5.2 Exception handling-exception handling model-specifying -throwing, try and catch constructs-list of exceptions
- 5.3 Graphics-text mode graphic functions- window(), cputs() gotoxy() textcolor() –Graphic mode functions-Initgraph() graphic driver-setcolor() setlinestyle() setfillstyle(), lineO circle() functions.

Text Book

Object Oriented Programming with C++ by E.Balagurusamy

Reference Book

1. Object-Oriented Programming in Turbo by C++,Lafore,Robert
2. C++ Primer by Lippman,Stanley Band Josee

I202 PROGRAMMING IN C ++

Model Question paper

Time : 3 Hrs

Maximum Marks:75

- N.B 1. Answer all questions
2. Answer any one from Part - A (5 Marks) and one from Part – B (10 Marks)

- I A 1. Explain c ++ program structure.
2. Explain the use of console input and output.
- B 1. Illustrate with an example how will call a function by reference and return by reference.
2. Explain function overloading.
- II A 1. What is a constructor?
2. How will you specify a class? Explain it.
- B 1. Explain: Friend functions.
2. Explain the following: (a) multiple constructor 9b) constructor with default arguments
- III A 1. What are the operators that can be overload?
2. What is the virtual function?
- B 1. Explain: unary operator overloading.
2. Multiple inheritances.
2.Explain: creating user defined manipulators.
- IV A 1. Write short notes on function template.
2. What is stream and what are the stream classes?
- B 1. Illustrate formatted console i/o operators with an example.
2. Explain: creating user defined manipulators.
- V A 1. What are the methods of deleting end of the file?
2. How will you open a file by using constructor?
- B 1. Explain: Exception handling.
2. Explain the text mode graphic functions.

I203 SYSTEM PROGRAMMING

III Term (Core Course)

6 Hrs / Week

Total Hrs: 72

MAJOR DIVISIONS:

UNIT – I ASSEMBLES & MACRO

UNIT – II LOADERS & COMPILERS

UNIT – III I/O PROGRAMMING & MEMORY MANAGEMENT

UNIT – IV PROCESSOR, DEVICE & INFORMATION MANAGEMENT

UNIT – V UNIX

UNIT – I: ASSEMBLES & MACRO (14Hrs)

- 1.1 Background: Machine structure; Memory; Registers; Data; Instructions.
- 1.2 Assembly Language: Machine-ops; pseudo-ops; simple Assembly Language Programs and their machine code translation (mnemonics).
- 1.3 Assemblers: Purpose; pass1 and pass2 of assembly with flowcharts; symbol-table, literal-table and base-table generation.
- 1.4 Macros: Concept; definition; macro calls; macro call with arguments; conditional macros; nested macros.
- 1.5 Macro processors: Definition; generation of macro definition table; macro name table; argument list array; two pass macro processors – simple two-pass algorithm (flowchart not included).

UNIT – II: LOADERS & COMPILERS (14 Hrs)

- 2.1 Loaders: Concept; general loader scheme; four functions of a loader – allocation, reallocation, linking and loading as accomplished by absolute, relocating and direct – linking loaders.
- 2.2 Features of a High Level Language: PL/1 language – Data types and structures; storage allocation and scope of names; Accessing flexibility; functional modularity; Asynchronous operation.
- 2.3 Compilers: Definition, lexical Analysis, Syntax Analysis; interpretation; Parse tree; storage Allocation; code generation; optimization; structure of a compiler.

UNIT – III/I/O PROGRAMMING & MEMORY MANAGEMENT (14 Hrs)

- 3.1 I/O Programming: Evolution of multiple processor system; I/O Programming; I/O Process structure; Communication between the CPU and the channel; Interrupt structure and processing; multiple processors.
- 3.2 Memory Management: Single contiguous Allocations; Partitioned Allocation; Real locatable partitioned Allocation ; paged Allocation; Demand paged Allocation.

UNIT – IV PROCESSOR, DEVICE & INFORMATION MANAGEMENT (15 Hrs)

- 4.1 Processor Management: Scheduler; Traffic controller; Race condition; stalemates; multiprocessor systems.
- 4.2 Device management: Device characteristics; device management Techniques.
- 4.3 Information management: Development of file systems; structure of a general File system;

UNIT – V UNIX (15 Hrs)

- 5.1 Features of UNIX : Multi-user; multiprocessor; time-sharing; portable; shell and kernel; security; communication; program development tools.
- 5.2 File System : The file-ordinary file, directory file, device file; structure of the file system; checking the current directory ; changing directories; listing out directory contents; displaying and creating files; making and removing directories; relative path names; file permissions; copying, deleting and removing files.
- 5.3 General Purpose Utilities : command structure; halted output with more command; file types; line, word and character counting; displaying file contents; comparing two files using cmp and commands; printing a file; login details, knowing your terminal, displaying the system date.
- 5.4 The Bourne Shell : The sh command; preceding a command by its path; combining commands; pattern matching – the wild cards; escaping – the back slash; quoting and echo command; connecting commands with pipes; command substitution; shell variables; search path for commands; shell scripts.

REFERENCE

- 1. Prentice Hall PTR, “Unix Systems Programming”, Key Robbins, Stew Robbins Published, 2nd Edn, 2003.
- 2. Leland, “An Introduction to System Programming”, Addison Wesley Published, 3rd Edn 1996.
- 3. John, “System Programming”, J.Dovovan Published Mc Graw Hill, 1972.

I203 SYSTEM PROGRAMMING

Model Question Paper

Time : 3 Hrs

Maximum Marks:75

- N.B 1. Answer all questions
2. Answer any one from Part - A (5 Marks) and one from Part – B (10 Marks)
- I. A. 1.Explain the general machine structure.
2.Define Macro. Give the general format with an example.
B.1.Explain pass 1 of assemblers with flowchart.
2.Explain the following:
a) Conditional Macro b) Nested Macro
- II. A. 1.Give the functions of the loader.
2.Explain about character string and bit string operations.
B. 1.Explain absolute and relocating loaders.
2.Explain the structure of a compiler.
- III. A. 1.Briefly explain the communication between the CPU and the channel.
2.Explain real locatable partitioned allocation.
B. 1.Explain in detail about interrupt structure and processing.
2.Explain single contiguous and partitioned allocation.
- IV. A. 1 What is Stalemate? Explain in brief.
2.Give the structure of a general file system.
B.1. Explain the two types of storage devices in detail.
2. Explain Multiprocessor Systems.
- V. A. 1.Explain the use of pipe symbol.
2.Give the difference between Cmp and Comm Commands.
B. 1.Explain the features of UNIX.
2.a. Explain the following:
1) Cat 2) Mkdir 3) Rm 4) Cp 5) cd
b. Explain the different types of files in UNIX.

I204 ELECTRONIC CIRCUITS AND MICROPROCESSOR LAB

6 Hrs / Week

Total Hrs:72

1. Characteristics of Semi-conductor diode.
2. Characteristics of Zener diode.
3. Characteristics of Bridge rectifier with and without filter.
4. Construct OR gate, AND gate, NOT gate, and NAND gate using IC's and verify their truth table.
5. Test the truth table of RS and JK flip-flops.
6. Construct divide by 2,5 and 10 counters using 7490 and verify the count tables
7. Using gates, construct Half adder and Full adder circuits.
8. Verification of Demorgan's law.
9. Program for finding the biggest number in data array.
10. Program for finding the smallest number in data array.
11. Program for multiplication of two 8-bit numbers.
12. Program for division of two 8-bit numbers.
13. Program for ascending of data in an array.
14. Program for descending of data in an array.
15. Program for converting binary to decimal numbers.
16. Program for converting decimal to binary numbers.
17. Clearing the memory locations.
18. Data transfer program.

I205 PROGRAMMING IN C++ LAB

5 Hrs / Week

Total Hrs:60

1. Write a function `max()` to find the biggest of the two integers given and return the answer to `main()`. The `main()` function is to supply two integer values to the `max()` and call it by reference.
2. Write programs to evaluate the following functions to 0.0001% accuracy.
 - a) $\sin x = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \dots$
 - b) $\text{Sum} = 1 + \frac{(1/2)^2}{2!} + \frac{(1/3)^3}{3!} + \frac{(1/4)^4}{4!} + \dots$
 - c) $\cos x = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} + \dots$

Using recursion and without using recursion

3.
 - a) Write a function `power()` to raise a number `m` to a power `n`. The function takes a double value for `m` and int value for `n` and returns the result correctly. Use a default value of 2 for `n` to make the function to calculate squares when this argument is omitted. Write a main that gets the values of `m` and `n` from the user to test the function.
 - b) Write a function that performs the same operation as that of program (a) but takes an int value for `m`. Both the functions should have the same name. Write a main that calls both the functions. Use the concept of function overloading.
4. Define a class to represent a bank account. Include the following members.

Data members:

- i) Name of the depositor
- ii) Account number
- iii) Type of account
- iv) Balance amount in account

Member functions:

- i) To assign initial values
- ii) To deposit an amount
- iii) To withdraw an amount after checking the balance
- iv) To display name and balance

Write a main program to test the program.

5. Create two classes `DM` and `DB`, which store the value of distance. `DM` stores distances in meters and centimeters and `DB` in feet and inches. Write a program that can read values for the class objects and add one object of `DM` with another object of `DB`. Use a friend function to carry out the addition operation. The object that stores the results may be a `DM` object or `DB` object, depending on the units in which the results are required. The display should be in the format of feet and inches or meters and centimeters depending on the object on display.

6. Define a class string that could work as a user-defined string type. Include constructors that will enable us to create an uninitialized string.

String S1;// string with length 0 and also to initialize an object with a string constant at the time of creation like String S2(“Well Done”);

Include a function that adds two strings to make a third string. Note that the statement.S2=S1; will be perfectly reasonable expression to copy one string to another.

Write a complete program to test your class to see that it does the following tasks.

- a) Creates uninitialized string objects.
 - b) Creates objects with string constants.
 - c) Concatenates two strings properly.
 - d) Displays a desired string object.
7. i) A book shop maintains the inventory of books that are being sold at the shop. The list includes details such as author, title, price, publisher and stock position. Whenever a customer wants a book, the sales person inputs the title and author and the system searches the list and displays whether it is available or not. If it is not, an appropriate message is displayed. If it is, then the system displays the book details and requests for the number of copies required. If the requested copies are available, the total cost of the requested copies is displayed otherwise the message “Required copies not in stock” is displayed.

Design a system using a class called books with suitable member functions and constructors. Use new3 operator in constructors to allocate memory space required.

- ii) Improve the system design in program(6) to incorporate the following features.
 - a) The price of the books should be updated as and when required. Use a private member function to implement this.
 - b) The stock value of each book should be automatically updated as soon as a transaction is completed.
 - c) The number of successful and unsuccessful transactions should be recorded for the purpose of statistical analysis. Use static data members to keep count of transactions.
8. Create a class MAT of size mxn. Define all possible matrix operations for MAT type objects.
9. Assume that a bank maintains two kinds of accounts for customers, one called as savings account and the other as current account. The savings account provides compound interest and withdrawal facilities but no cheque book facility but no interest. Current account holders should also maintain a minimum balance and if the balance falls below this level, a service charge is imposed.

Create a class account that stores customer_name, account number and type of account. From this derive the classes cur_acct and sav_acct to make them more specific to their requirements. Include necessary member functions in order to achieve the following tasks.

- a) Accept deposit from a customer and update the balance.
- b) Display the balance.
- c) Compute and deposit interest.
- d) Permit withdrawal and update the balance.
- e) Check for minimum balance, impose penalty, necessary, and update the balance.

Do not use any constructors. Use member functions to initialize the class members.

10. Create a base class called Shape. Use this class to store two double type values that could be used to compute the area of figures. Derive two specific classes called triangle and rectangle from the base shape. Add to the base class, a member function get_data() to initialize base class data members and another member function display_area() to compute and display the area of figures. Make display_area() as a virtual function and redefine this function in the derived classes to suit their requirements.

Using these three classes, design a program that will accept dimensions of a triangle or a rectangle interactively, and display the area.

Remember the two values given as input will be treated as lengths of two sides in the case of rectangles, and as base and height in the case of triangles, and used as follows:

$$\text{Area of rectangle} = x * y$$

$$\text{Area of triangle} = \frac{1}{2} * x * y$$

11. Write a program which reads a text from the keyboard and displays the following information on the screen in two columns:

- a) Number of lines.
- b) Number of words.
- c) Number of characters.

Strings should be left-justified and numbers should be right-justified in a suitable field width.

12. A file contains a list of telephone numbers in the following form

```
John 23456
Ahmed 9876
.....
```

The names contain only one word and the names and telephone numbers are separated by white space. Write a program to read the file and output the list in two columns. The names should be left-justified and the numbers right-justified.

13. (a) Write a program that will create a data file containing the list of telephone numbers given in program(13). Use a class object to store each set of data.

- b) Write an interactive, menu-driven program that will access the file created in program(14) and implement the following tasks.
- i) Determine the telephone number of the specified person.
 - ii) Determine the name if a telephone number is known.
 - iii) Update the telephone number, whenever there is a change.
- 14 a) Write a function template for finding the minimum value contained in an array.
- b) Write a class template to represent a generic vector. Include member functions to perform the following tasks.
- a) To create the vector.
 - b) To modify the value of a given element.
 - c) To multiply by a scalar value.
 - d) To display the vector in the form(10,20,30,.....)
15. Write a program with the following:
- a) A function to read two double type numbers from keyboard.
 - b) A function to calculate the division of these two numbers.
 - c) A try block to throw an exception when a wrong type of data is keyed in.
 - d) A try block to detect and throw an exception if the condition "divide-by-zero" occurs.

Appropriate catch block to handle the exceptions thrown.

SCHEME OF EXAMINATION

TOPICS	MARKS
Exercise	70
Viva	5
Total Marks	75

I206 SOFTWARE LAB

Question from part A and one from part B.

6 Hrs / Week

Total Hrs: 72

PART – A

DOS :

1. a. Formatting and Unformatting the floppy disk.
b. Creating, Changing, Copying, Moving and Removing directories.
2. a. Write the syntax and purpose of the following commands :
XCOPY, BACKUP, RESTORE, PROMPT.
b. Explain the method of redirecting the output to a file.
3. a. Creating config.sys, Batch file, and AUTOEXEC.BAT files using EDIT/
COPY CON command.
b. Explain the use of following commands : PATH, PROMPT, SORT.
4. a. Creating, Viewing, Copying, Moving and Removing files.
b. Explain the use of the following commands :
ECHO, SET, FIND, ATTRIB.

UNIX :

5. a. Creating, Changing, Copying, Viewing and Removing directories.
b. Explain the use of following commands : more, grep, sort, chmod.
6. a. Explain the System Administrator functions for Adding & Removing an user to the System.
b. Explain the use of following commands :
shutdown, find, ps, set, who.
7. a. Creating, Viewing , Copying, Moving and Removing files.
b. Explain the use of following commands :
write, mail, echo, man.

Windows 98 :

8. a. Creating and Removing Folders and Shortcuts.
b. Expanding and Collapsing folders.
c. Recognizing file types using icons.
d. Renaming a file or folder.
e. Displaying the properties of a file or folder.

9.
 - a. Installing a screen saver.
 - b. Assigning a wallpaper to desktop.
 - c. Adding a program to the Start Menu.
 - d. Recovering files and folders from Recycle Bin.
 - e. Customizing the mouse setting.

Part – B

MS WORD :

1. Create and apply a style in a document & create a template for the style created and assemble the style for template [Use Bullets and Numbering option also].
2. Create an envelop and mail merge and do the following options :
 - a. Printing envelops with 'From' and 'To' address.
 - b. Using Mail Merge facilities for printing invitations to many persons and mailing labels for printing
3. Creating and editing the table using table menu and creating a monthly calendar using cell editing operations like inserting, joining, deleting and splitting cells.

MS Excel :

4. Prepare a worksheet showing a monthly sales of a company in different branch office and create a chart for the above company's details.
5. Using the data consolidate command to calculate the total amount budgeted for all departments (wages, travel and entertainment, office supplies and so on) and to calculate the average amount budgeted for the above details.

MS Access :

6. Creating a database for storing particulars of employees in an organization and do the following options :
 - a. List the employees particulars.
 - b. Filtering the records table.
 - c. Sorting the records in the table.
 - d. Creating a query for the data in the table.
7. Create a form for entering and viewing the data in the table. Exporting data from the access database to another program (for example dBASE format/Excel).
8. Generating reports and mailing labels with report heading, column heading and page number.

MS Power Point :

9. Creating a simple presentation with at least 5 slides to introduce your friend and include

sounds in slides.

For Autonomous Practical Examination

SCHEME OF EXAMINATION

Topic	Marks
Part A Exercises (Any one)	35
Part B Exercises (Any one)	30
Viva - Voce	10
Total	75